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Application No.: 09/955,223

Docket No.: 30001070-2 US (1509-218)

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-89. (Cancelled)

90. (Currently amended) A method of recording data during successive data recording sessions on a data storage tape of a tape cartridge loaded in a tape drive, the sessions occurring at different times, the method comprising recording data in each recording session by:

~~repositioning~~ positioning the tape prior to the start of the data recording session so the tape is ~~repositioned~~ positioned to a start point at the start of a data set to be recorded during the session;

after the session has started and during the data recording session, writing the data set to the tape;

after the data set has been written to the tape, issuing a reposition command to the tape drive so the tape is ~~again repositioned at the start of the data set~~;

creating a code representative of the data in the data set that has been written during the recording session between the position command and the reposition command ~~command~~;

after the tape drive receives the reposition command ~~is again repositioned at the start of the data set~~, writing the code into a memory incorporated within the tape cartridge;

in response to the code being written into the memory, incrementing a code counter

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indicating a count of the number of codes written into the memory; and  
writing the count into a count field of the memory.

91. *(Previously presented)* A method according to claim 90, wherein the code includes a signature.

92. *(Previously presented)* A method according to claim 91 wherein the signature is coded to include a checksum or a cyclic redundancy check (CRC).

93. *(Previously presented)* A method according to claim 90, wherein the memory includes a cartridge memory that differs from the tape.

94. *(Previously presented)* A method according to claim 90, wherein the memory includes a dedicated area of the tape.

95. *(Previously presented)* A method as claimed in claim 90, further including the steps of:  
reading back a data set from the tape;  
creating a further code representative of the data in the data set read back from the tape;  
comparing the two codes; and  
confirming the data set as valid only if the two codes agree.

96. *(Previously presented)* A method according to claim 95, wherein the comparing and

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confirming steps are carried out by a controlling software application.

97. *(Previously presented)* A method according to claim 95, wherein at least one of the comparing and confirming steps is carried out by an external reader which accesses and displays information recorded in the memory.

98. *(Previously presented)* A method according to claim 90, further including the steps of checking whether the number of codes written into the memory has reached a predetermined number and, if so, reporting the tape as read only.

99. *(Cancelled)*

100. *(Previously presented)* A method according to claim 90, further including the step of comparing the codes and number of entries against information held on a secure database.

101. *(Previously presented)* Apparatus for recording data during successive data recording sessions occurring at different times, on a data storage tape of a tape cartridge, the apparatus comprising:

a tape drive to receive the tape cartridge, and a processor having software to control the tape drive to record data in each recording session by performing the steps of claim 90.

102. *(Previously presented)* Apparatus according to claim 101, wherein the code includes a

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signature.

103. *(Previously presented)* Apparatus according to claim 101 wherein the signature is coded to a checksum or a cyclic redundancy check (CRC).

104. *(Previously presented)* Apparatus according to claim 101, wherein the memory includes a cartridge memory.

105. *(Previously presented)* Apparatus according to claim 101, wherein the memory includes a dedicated area of the tape.

106. *(Previously presented)* Apparatus as claimed in claim 101, wherein the processor is arranged to read back a data set from the tape, create a further code representative of the data in the data set read back from the tape, compare the two codes, and confirm the data set as valid only if the two codes agree.

107. *(Previously presented)* Apparatus according to claim 106, comprising an external reader for accessing and displaying information recorded in the memory.

108. *(Previously presented)* Apparatus according to claim 101, wherein the processor is arranged to check whether the number of codes written into the memory has reached a

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predetermined number and, if so, to report the tape as read only.

109. *(Cancelled)*

110. *(Currently amended)* Apparatus for recording data during successive data recording sessions occurring at different times, on a data storage tape of a tape cartridge, the apparatus comprising:

a tape drive arranged to receive the tape cartridge;

means for issuing a ~~reposition~~ position command to the tape drive;

means for causing the data recording session to start after the tape drive has been ~~repositioned~~ positioned to a start of a data set to be recorded during the session in response to the issued command;

means for writing the data set to the tape after the data recording session has started and during the data recording session;

means for issuing a ~~further~~ reposition command to the tape drive for causing the tape to ~~again~~ be repositioned after the data set has been written to the tape;

means for creating a code representative of the data in the data set that has been written during the recording session between the position command and the reposition commands~~command~~;

means for writing the code into a memory incorporated within the tape cartridge after the tape is ~~again repositioned at the start of the data set~~;

means connected to be responsive to the code being written into the memory for

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incrementing a code counter for indicating a count of the number of codes written into the memory; and

means for writing the count into a count field of the memory.

111. *(Previously presented)* Apparatus according to claim 110, wherein the code includes a signature.

112. *(Previously presented)* Apparatus according to claim 110, wherein the signature is coded to include a checksum or a cyclic redundancy check (CRC).

113. *(Previously presented)* Apparatus according to claim 110, wherein the memory includes a cartridge memory that differs from the tape.

114. *(Previously presented)* Apparatus according to claim 110, wherein the memory includes a dedicated area of the tape.

115. *(Previously presented)* Apparatus according to claim 110, further comprising means to read back a data set from the tape, means to create a further code representative of the data in the data set read back from the tape, means to compare the two codes, and means to confirm the data set as valid only if the two codes agree.

116. *(Previously presented)* Apparatus according to claim 110, further comprising means to

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access and display information recorded in the memory.

117. *(Previously presented)* Apparatus according to claim 110, further comprising means to check whether the number of codes written into the memory has reached a predetermined number and, if so, to report the tape as read only.

118. *(Cancelled)*

119. *(Previously presented)* Apparatus according to claim 101, wherein the processor software includes an erase command for erasing both the data on the tape and the contents of the memory.

120. *(Previously presented)* The method of claim 90, wherein the method is performed to backup data of a computer to the data storage tape so that the data set written to the tape is the set of data of the computer being backed up and the created code is indicative of the backed up data.

121. *(Previously presented)* The method of claim 90, wherein the memory includes an area for storing several codes corresponding with data sets written to the tape, the method further comprising: writing, into different portions of the area, different codes corresponding with each different data set written into the tape as a result of writing the different data sets into the tape; performing a restoration or validation operation of a data set on a tape of a tape cartridge loaded in the drive; the restoration or validation operation including: (a) causing the tape drive to

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comply with a request to report the code of a data set required to be restored or validated by reading the requested code from the portion of the memory area where the code for the data set required to be restored or validated is located; (b) positioning the tape to the start of the data set to be restored or validated; (c) then reading the data set to be restored or validated back from the tape; (d) generating a new code corresponding with the data set read during (c), the new code being generated externally of the memory; and (e) after completion of step (c), comparing the new code generated during (d) with the code read during (a) to determine if the data set read during (c) is valid or invalid.

122. *(Previously presented)* The apparatus of claim 110, wherein the memory includes an area for storing several codes corresponding with data sets written to the tape, the drive being arranged for: (A) writing, into different portions of the area, different codes corresponding with each different data set written into the tape as a result of writing the different data sets into the tape; (B) performing a restoration or validation operation of a data set on a tape of a tape cartridge loaded in the drive; the restoration or validation operation including: (a) causing the tape drive to comply with a request to report the code of a data set required to be restored or validated by reading the requested code from the portion of the memory area where the code for the data set required to be restored or validated is located; (b) positioning the tape to the start of the data set to be restored or validated; (c) then reading the data set to be restored or validated back from the tape; a processor arrangement for (i) generating a new code corresponding with the data set read during (c), the new code being generated externally of the memory; and (ii) after completion of step (c), comparing the new code generated during (i) with the code read



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during (a) to determine if the data set read during (c) is valid or invalid.

123. *(Previously presented)* The apparatus of claim 122, wherein the tape drive includes the processor arrangement for (i) generating the new code.

124. *(Previously presented)* The method of claim 91 wherein one of the recording sessions is for backing up data, and performing the following steps during the session:

preventing rewriting of a signature by limiting access to the memory to allow only (a) retrieval of signatures, and (b) creating of a new signature at a previously unused counter location.

125. *(Currently amended)* ~~[[the]]~~ The method of claim 124, wherein the signature is written to the next free slot of the memory at the same time that the signature count is incremented in the code counter.

126. *(Previously presented)* The method of claim 95, wherein the steps recited in claim 95 are performed in connection with a recording session during which data are restored.

127. *(Previously presented)* The apparatus of claim 106, wherein the processor is arranged to perform the steps of claim 106 in connection with a recording session during which data are restored.

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**128. (Previously presented)** The apparatus of claim 115, wherein the means recited in claim 115 are arranged to be activated in connection with a recording session during which data are restored.

**129. (New)** The method of claim 90, wherein writing the code comprises repositioning the tape prior to writing the code into the memory.

**130. (New)** A method of protecting data recorded on a data storage tape, the data recorded during successive sessions on the data storage tape, the method comprising:  
generating a code representative of tamper-free data in a data set written during a session; and  
recording the code in a dedicated portion of the tape cartridge set aside from the data set.

**131. (New)** A method of recording data during successive data recording sessions on a data storage tape of a tape cartridge loaded in a tape drive, the sessions occurring at different times, the method comprising recording data in each recording session by:

positioning the tape prior to the start of the data recording session so the tape is positioned to a start point at the start of a data set to be recorded during the session;

after the session has started and during the data recording session, writing the data set to the tape;

after the data set has been written to the tape, issuing a reposition command to the tape drive so the tape is repositioned;

creating a code representative of the data in the data set that has been written during the

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recording session between the position command and the reposition command;

writing the code into a memory incorporated within the tape cartridge, wherein the memory comprises a cartridge memory that differs from the tape;

in response to the code being written into the memory, incrementing a code counter indicating a count of the number of codes written into the memory; and

writing the count into a count field of the memory.